System Dynamics Modeling

Recognizing local conditions such as access to healthy food options; access to safe physical activity options; primary health care; sources of stress such as poverty, crime, and discrimination; policies regarding tobacco and air pollution have a strong bearing on the health status of communities, System Dynamics Modeling will allow community and public health leaders in the Delta to answer the following strategic questions:

- How do local conditions affect multiple *risk factors* for *cardiovascular disease*, and how do those risks affect *population health status* and costs over time?
- How do different local interventions affect the cardiovascular health and related expenditures in the short- and long-term?
- How might local health leaders better balance their efforts given limited resources?

The model integrates much of what is known about major cardiovascular risks (CVD) and local policy options into a single testable framework for prospective policy analysis and incorporates data from many sources to represent adults in the 18 Delta County Region who have never had a CVD event. It tracks the trajectories of the leading direct and indirect risk factors and contains 19 policy options for evaluating simulated interventions. The main outcomes are first-time CVD events and deaths and total consequence costs, which combine all medical expenditures and productivity costs associated with CVD events and risk factors. Activities for this project include:

1. Calibration of the System Dynamics Model to the Mississippi Delta.
2. Convening on stakeholders to consider the effectiveness of current programs within the scope of the Model.
3. Collaborate with stakeholders to strategically allocate funds and implement programs within the scope of the model, considering the local contextual factors for the Mississippi Delta.

System Dynamics Stakeholder Meetings

The Mississippi Delta Health Collaborative is engaging regional and statewide stakeholders to assess and strategically plan programs which focus on reducing cardiovascular disease risk factors among Delta residents through the utilization of a simulated model for evaluating multiple approaches to preventing and managing cardiovascular risks.

Two stakeholder meetings have been conducted in the Mississippi Delta on January 14 -15, 2009 and July 9, 2009, in Stoneville, MS at the Mississippi State University Delta Research Extension Center. The meetings were co-facilitated by the MDHC, CDC, and the Sustainability Institute. The purpose of the meeting was to explore opportunities to support and engage community members in developing and implementing public health strategies to promote healthy lifestyles and reduce the burden of disease in the Mississippi Delta at the policy and environmental systems level.

Next Steps for System Dynamics Modeling

City Health Forums in partnership with local Mayors' Offices – Beginning September 2009
MDHC Strategic Alliance Meeting (Strategic Alliance) – October 2009

Policy Listening Sessions

The MDHC is conducting listening sessions in each target county with local political leaders including Mayors, Legislators, Board of Supervisors, and Alderman. The purpose of the sessions is to:

1. Identify policy champions or political leaders as health advocates.
2. Identify health related issues of importance to political leaders.
3. Identify prior or planned actions taken by political leader to address health related issues and discuss the impact of these actions, if applicable.
4. Identify and discuss actions to improve or create an environment within the Mississippi that makes healthy choices easy and accessible.
5. Address and attempt to understand concerns with political leaders with regards to the Delta Health Collaborative.
6. Gain support from political leaders for the Delta Health Collaborative and work together as we move forward.

It is anticipated the policy listening sessions will take place October – December 2009.

Evaluation

Emory Prevention Research Center in Atlanta, GA will service as the Evaluation Lead for the Mississippi Delta Health Collaborative and will oversee the design of the overall evaluation framework with common community measures based on evidence based public health resources including the Community Guides and CDC Evaluation Framework. The Evaluation Lead will work with the Mississippi Urban Research Center (MURC) or an In-State Evaluator to develop and test methodologies for assessing the impact of community-based heart disease and stroke prevention initiatives. Emory Prevention Research Center will provide guidance to MURC for assisting the MSDH in program monitoring using measures developed in a collaborative process. Emory will track progress towards accomplishment of short-term, intermediate, and long-term goals of the MDHC. Collaboratively, both entities will produce a final report documenting the impact of the MDHC on the Delta region in terms of new health promotion policies, environmental change, increased capacity, behavioral change, application of theory, and reduction in risk factors for disease and disparities in health outcomes.

Through this mentoring model, the Office of Preventive Health seeks to improve capacity within the state to design, implement and evaluate health promotion and chronic disease prevention programs supported by the MSDH, as well as facilitate the development of sound evaluation research among chronic disease prevention practitioners.

Community Mapping

In an effort to understand how external factors within community affect decisions regarding healthy behaviors, community mapping is being conducted to determine the accessibility to resources. The program will examine access to quality fruits and vegetables, places to exercise, and options for quality healthcare, including hypertension management. These will be examined through the lens of cost to the individual, including monetary, distance required to travel, and hours of availability which can impact time away from work or family. Currently, information on access points within the community is being gathered.